



Memorandum

CH2M HILL, Inc.
6312 S. Fiddler's Green Circle
Suite 300N
Greenwood Village, CO 80111

Subject: Data Evaluation Report, 2022 Residential Soil Sampling

Project Name: Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County and Madison County, Illinois
Task Order No. 68HE0521F0068/Contract No. 68HE0318D0004

Attention: Sheila Desai/U.S. Environmental Protection Agency (EPA)

From: CH2M HILL, Inc. (CH2M)¹

Date: March 21, 2023

DCN: DES-R5-21F0068-02006

CH2M performed remedial design (RD) soil sampling for the Old American Zinc Plant Superfund Site (site) with the following goals: (1) collect data at surrounding residential, commercial/industrial, and vacant properties associated with the site; and (2) evaluate the nature and extent of contaminants of concern (COCs) in the surrounding property areas. The COCs are arsenic, cadmium, zinc, and lead. The sampling results will be used to support the RD for the surrounding properties. Previous sampling events include time critical- removal action (TCRA) sampling, remedial investigation (RI) sampling, and RD sampling events in 2017, 2018, 2019, 2020, and 2021. These previous events also supported RD for the surrounding properties and the on-site facility area (FA) consolidation area. The sampling was conducted in accordance with the *Uniform Federal Policy Quality Assurance Project Plan* (UFP-QAPP) (CH2M, 2021) at residential (vacant and occupied) and exempt properties. Additionally, guidance from the *Cultural Resources Monitoring for the Old American Zinc Plant Superfund Site Remediation Activities* (CH2M, 2019a) was also followed in the field.

This report presents the results of soil sampling conducted for the COCs at 11 properties. The data tables at the end of this document present the data for each property sampled and a summary of COC exceedances. Attachment 1 contains the data quality evaluation report, Attachment 2 provides a photo log, and Attachment 3 contains field logbook pages from sampling.

This report is composed of the following five sections:

- 1) Introduction (site description and history, and purpose of sampling)
- 2) Data Acquisition (field activities conducted during the sampling event)
- 3) Sampling Results
- 4) Conclusions
- 5) References

¹ CH2M HILL, Inc. is a wholly owned subsidiary of Jacobs Solutions Inc.

1. Introduction

1.1 Site Description

The site is in the village of Fairmont City and the city of Washington Park in St. Clair County and Madison County, Illinois (Figure 1). The site includes a 132-acre FA and surrounding properties, where elevated metals concentrations associated with the facility operation were found in different media. The FA is bordered by several commercial and industrial properties, including Garcia Trucking to the west, the CSX Intermodal railroad yard to the south, and General Chemicals to the east. Most of the residential properties lie to the west of the FA, with smaller pockets of residential or trailer-park developments to the south, east, and north of the FA.

Zinc-smelting operations were conducted at the site from 1916 to 1967. Slag from the smelting operation was cooled by placing the molten material along the northern and western boundaries of the FA. Slag from the site was transported offsite and used as fill material in residential yards and alleyways. The slag stockpiles originally encompassed an area of 15 acres. The site, including the clinker and other smelting residues on the property, was purchased in 1979 by XTRA Intermodal, Inc. (XTRA). XTRA operated a trucking terminal at the site that involved the leasing, storage, and maintenance of a diverse fleet of trailers until 2003. XTRA ground up and redistributed the slag stockpiles on the FA to build up and level the former plant site to facilitate its trucking operation. At present, redistributed slag on the FA covers an area of 125 acres, with thicknesses ranging from 6 inches to 9 feet (ENTACT, 2012).

1.2 Site History

Site investigations conducted at the site since 1994 detail the nature and extent of contamination in the FA and surrounding properties. ENTACT completed the RI (ENTACT, 2009) and feasibility study (FS) (ENTACT, 2012) for the FA in 2012 and identified contaminants in different media that included slag stockpiles, ground slag that was used as fill material at surrounding properties, and high metals concentrations in shallow groundwater.

The surrounding areas impacted by the plant operations include residential, commercial, and vacant properties, village alleyways, and drainageways. Ground slag was transported to surrounding properties by local businesses, residents, and the Village for use as fill material in residential yards and surfacing alleyways (ENTACT, 2012). Most of the impacted properties are located to the west of the FA, with small pockets of impacted properties located in trailer parks and residential developments to the north, south, and east.

The potentially responsible party (PRP), under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act, conducted a TCRA from 2002 to 2003. A total of 462 surrounding properties was sampled, of which 209 properties were found to have lead concentrations exceeding the TCRA action level of 400 milligrams per kilogram (mg/kg) for residential properties and 1,000 mg/kg for commercial properties. No removal action was performed for vacant properties unless lead exceeded 1,200 mg/kg. Impacted soil was removed from 152 properties, with the remaining properties to be addressed under a remedial action that began in 2018. An additional 25 properties and 8 alleyways were sampled as part of the RI.

Following the completion of the RI/FS in 2012, EPA issued a Record of Decision (ROD) (EPA, 2012) detailing the selected remedial approach for the site. EPA entered into an Administrative Order on Consent with the PRP in August 2014 to perform the RD work. As part of the RD, an additional 14 residential properties were sampled during the predesign investigation (ARCADIS, 2016a), and a draft final RD report (consisting of the report and selected drawings but no technical specifications)

(ARCADIS, 2016b) was submitted to EPA. In April 2016, the entity responsible for the PRP's work filed for Chapter 11 bankruptcy and ceased performing additional work at the site. As a result, EPA took control of the site and tasked CH2M to complete the RD activities for the FA and surrounding properties.

1.3 Previous Remedial Design Sampling

CH2M collected RD soil samples from residential (occupied and vacant), commercial, exempt properties, and alleyways in 2017, 2018, 2019, 2020, and 2021. Composite samples from properties were screened against the cleanup levels (CLs) specified in the ROD (residential CLs are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead, and 6,400 mg/kg for zinc). Composite samples from alleyways were screened against the nonresidential CLs specified in the ROD (239 mg/kg for arsenic, 809 mg/kg for cadmium, 826 mg/kg for lead, and 306,600 mg/kg for zinc).

- A total of 207 properties and 26 alleyways were sampled in 2017 (2 events). Nineteen properties that were previously sampled but required additional information based on EPA's evaluation were resampled during this round of sampling. Ultimately, 65 properties were identified with COC exceedances greater than the CL. Among these 65 properties, 32 residential properties and 8 alleyways were designated for cleanup. Additionally, 35 properties sampled during the TCRA and RI and 1 alleyway were included in the design. The remaining properties were designated by EPA for expedited cleanup and were not sketched or designed. Design drawings were included in the Final *Basis of Design Report* (and Revision 1) based on CH2M's 2017 investigation and historical data (CH2M, 2018a; 2018b).
- A total of 222 properties were sampled in 2018 (4 events). One property that had been previously sampled in 2017 was combined with two other parcels and resampled in 2018. Nine properties that had been previously sampled by ENTACT but required additional information based on EPA's evaluation were resampled during this round of sampling. Ultimately, 77 properties with COC exceedances greater than the residential CL were identified. Among these 77 properties, 66 residential properties were designed for cleanup. Additionally, 23 properties sampled during the TCRA and RI were included in the design. The remaining properties were designated by EPA for expedited cleanup and were not sketched or designed. Design drawings were included in Addendum 1 of the Final *Basis of Design Report* (CH2M, 2019b) based on CH2M's 2018 investigation and historical data.
- A total of 44 properties were sampled in 2019 (1 event). Four of these properties were granted access for sampling by a St. Clair County Trustee. Twelve properties with COC exceedances greater than the residential CL were identified. All 12 properties were designed for cleanup. Design drawings were included in Addendum 2 of the Final *Basis of Design Report* (CH2M, 2020a) based on CH2M's 2019 investigation and historical data.
- A total of 12 properties were sampled in 2020 (1 event). Five properties were identified with COC exceedances greater than the residential CL. All 5 properties were designed for cleanup and were included in Addendum 3 of the Final *Basis of Design Report* (CH2M, 2020b) based on CH2M's 2020 investigation and historical data.
- A total of 22 properties were sampled in 2021 (1 event). Five properties were identified with COC exceedances greater than the residential CL. All five properties were designated for cleanup and were included in the *Data Evaluation Report* (CH2M, 2022).

1.4 Purpose

The purpose of the 2022 RD soil sampling event was to identify which properties require remediation of elevated concentrations of COCs in the top 24 inches of surface soil. Sample results were used to evaluate the maximum depth of COC exceedance based on the exceedance criteria defined by the ROD (EPA, 2012). Table 1 includes the CLs for soil based on human health risk.

Sketches were completed for each yard area where concentrations of arsenic, cadmium, lead, or zinc in the composite sample exceed the applicable CL specified in the ROD. Contaminated soil from the identified residential or vacant properties at concentrations exceeding the CL will be excavated to the maximum depth of contamination and placed in the consolidation area.

2. Data Acquisition

2.1 Property Access

The parcel databases for surrounding properties associated with the site were obtained from the St. Clair County and Madison County geographical information system (GIS) offices. Multiple parcels in the database with the same street address and property owner information were identified and combined into one property. In addition, each property was divided into multiple yard areas for sampling purposes based on the total area of the property as described in Section 2.4, Sampling Methods.

Fact sheets and access agreements were mailed in March and October of 2022 to property owners who had not responded to previous mailings or who had previously denied access. The mailing lists targeted occupied residential properties, although some vacant residential properties were also included. A unique identification (ID) number was given to each property before mailing to track properties without unique addresses. These ID numbers are also used as sampling IDs during the RD soil sampling events.

2.2 Sampling

One sampling event was completed in December 2022. A total of 11 properties (19 parcels) were sampled during this event. Soil samples were collected in accordance with the UFP-QAPP (CH2M, 2021) and analyzed through the EPA Contract Laboratory Program for arsenic, cadmium, lead, and zinc by Method ISM02.4.

2.3 Utility Locating

Before sampling, public utilities were marked by placing a utility-locate request through the Illinois One-Call system, JULIE. Private utilities within each property were marked by a third-party utility-locate subcontractor, Ground Penetrating Radar Systems, Inc. Utilities were marked using the American Public Works Association Uniform Color Code System. Before intrusive work, CH2M also conducted a visual inspection of each property for utilities and, if the homeowner was available, inquired about private utilities on the property.

2.4 Sampling Methods

Soil samples were collected from residential (vacant and occupied) and exempt properties. Priority was given to residential-zoned properties with structures and occupants, although some residential vacant properties were sampled as well. The soil sampling consisted of collecting 176 composite samples from 11 properties (19 parcels) (not including quality assurance [QA]/quality control [QC] samples; Table 2).

In accordance with the UFP-QAPP, the number of yard areas sampled for each property was selected based on the property's total surface area. For properties with a surface area less than 5,000 square feet, a five-point composite sample was collected from the front yard, and a five-point composite sample was collected from the back yard. If there was a significant side yard (at least 10 feet of yard), a five-point composite sample was collected from the side yard. Composite samples (five-point) were collected from the front, middle, and back yards of vacant (no structures) properties with a total surface area less than 5,000 square feet to compensate for the larger surface area because of the absence of a building. For properties with an area greater than 5,000 square feet, the property was subdivided into four areas of roughly equal surface area, and a five-point composite sample was collected from each area. Depending on the configuration of the property, the areas were sectioned into equally sized sections divided parallel to the street and sampled in "slices." Sampling area divisions were developed based on aesthetic purposes of sod replacement if soil remediation was needed. For properties with an area greater than 1 acre, the property's grass or soil surface area was divided into 0.5-acre sections, and a five-point composite sample was collected from each section. Alternate sampling schemes were reviewed and approved by EPA.

Soil samples were collected using a hand auger or direct push sampler from five points within a section and in 6-inch intervals up to a depth of 24 inches (0 to 6, 6 to 12, 12 to 18, and 18 to 24 inches). Approximately 4 ounces of soil were collected from each of the 5 points per depth interval and homogenized using stainless-steel spoons in a bucket lined with a disposable liner. Rocks, miscellaneous debris, and vegetation were removed before the composite sample was placed in a jar. Four samples were collected per yard area or section (excluding QA/QC samples) and submitted to the laboratory for analysis. Section 3 presents laboratory analytical results to be used to determine excavation limits in the event that concentrations exceeded a CL.

2.5 Quality Assurance/Quality Control

In accordance with the UFP-QAPP, QA/QC samples were collected based on the number of samples submitted to the laboratory. Samples were analyzed for total arsenic, cadmium, lead, and zinc per Method ISM02.4; Table 2 summarizes the QA/QC samples collected during the 2022 sampling event. Field duplicates were collected at a rate of at least 1 per 10 parent samples. Matrix spike and matrix spike duplicates were collected at a rate of 1 per 20 soil laboratory samples, and 1 equipment blank sample was collected per sampling team per day. Table 3 presents sample results (properties greater than 5,000 square feet), and Attachment 1 contains the data quality evaluation.

3. Sampling Results

The following subsections summarize soil sampling results.

Soil samples were collected from 11 properties (19 parcels) in 2022. Table 3 (properties greater than 5,000 square feet) presents total arsenic, cadmium, lead, and zinc analytical data for residential properties, with values exceeding CLs shaded in grey. For samples with field duplicate data, the greater of the parent or duplicate sample is reported. Figure 2 shows the current site status, including all properties sampled in 2017 through 2022. Figure 3 shows properties with at least one exceedance by COC in 2022.

3.1 Total Arsenic

The average arsenic concentration at residential properties sampled in 2022 was 7.20 mg/kg, with a maximum concentration of 17 mg/kg. Zero of the 176 samples exceeded the residential CL of 32 mg/kg. On a per-property basis, 0 of 11 properties exceeded the arsenic CL (Figure 3).

3.2 Total Cadmium

The average cadmium concentration at residential properties sampled in 2022 was 9.70 mg/kg, with a maximum concentration of 64 mg/kg. A total of 2 out of 176 samples exceeded the residential CL of 37 mg/kg, for an overall exceedance frequency of 1.1 percent. One of the exceedances occurred in the 0- to 6-inch depth interval and one of the exceedances occurred in the 12- to 18-inch depth interval. On a per-property basis, 2 out of 11 properties exceeded the cadmium CL (Figure 3).

3.3 Total Lead

The average lead concentration at residential properties sampled in 2022 was 110 mg/kg, with a maximum concentration of 770 mg/kg. A total of 8 out of 176 samples exceeded the residential CL of 400 mg/kg for an overall exceedance frequency of 4.5 percent by samples. Two of the exceedances occurred in the 0- to 6-inch depth interval, three occurred in the 6- to 12-inch interval, and three occurred in the 12- to 18-inch interval. On a per-property basis, 2 out of 11 properties exceeded the lead CL (Figure 3).

3.4 Total Zinc

The average zinc concentration at residential properties sampled in 2022 was found to be 530 mg/kg, with a maximum concentration of 2,500 mg/kg. None of the 176 samples exceeded the residential CL of 6,400 mg/kg.

3.4.1 Summary of Exceedances

Lead was the most common COC for CL exceedances in samples and in properties. This is consistent with previous years' investigations.

The maximum concentrations were as follows:

- Arsenic: 17 mg/kg
- Cadmium: 64 mg/kg
- Lead: 770 mg/kg
- Zinc: 2,500 mg/kg

In 2022, the higher exceedance frequency observed for cadmium and lead suggests that cadmium and lead are the primary COCs in residential soil, which drive the requirement for the residential soil cleanups. This is consistent with previous sampling events. Table 4 presents a summary of the exceedances on a per sample basis, and Table 5 presents a summary of the exceedances on a per property basis.

4. Conclusions

Figure 2 presents the distribution of properties that have been sampled, and Figure 3 presents the properties with COC concentrations exceeding the residential CLs for cadmium and lead.

The laboratory analytical results presented herein for total arsenic, cadmium, lead, and zinc will be used to evaluate whether remediation of the property is needed. The maximum depth of a COC exceedance, the

yard area(s) with the exceedance, and the details from the sketches will be used to prepare RD drawings for each property showing the excavation extents and depth of excavations. Table 7 contains a complete list of properties with CL exceedances in 2022. Of the 11 properties sampled during this investigation, 2 properties were identified with COC exceedances greater than the residential CL. Both properties with exceedances were sketched in January 2023 and will be included in Addendum 5 of the *Final Basis of Design Report*, to be submitted in April 2023.

5. References

ARCADIS. 2016a. *Predesign Investigation Report, Fairmont City, Old American Zinc Plant Site, Fairmont City, Illinois*. January.

ARCADIS. 2016b. *Draft Final Design Report, Fairmont City, Old American Zinc Plant Site, Fairmont City, Illinois*. March.

CH2M HILL, Inc. (CH2M). 2018a. *Final Basis of Design Report, Surrounding Properties, Old American Zinc Plant Site, Fairmont City, Illinois*. October.

CH2M HILL, Inc. (CH2M). 2018b. *Final Basis of Design Report, Surrounding Properties, Revision 1, Old American Zinc Plant Site, Fairmont City, Illinois*. December.

CH2M HILL, Inc. (CH2M). 2019a. *Cultural Resources Monitoring for the Old American Zinc Plant Superfund Site Remediation Activities, Madison and St. Clair Counties, Illinois*. February.

CH2M HILL, Inc. (CH2M). 2019b. *Final Basis of Design Report, Surrounding Properties, Revision 1, Addendum 1, Old American Zinc Plant Site, Fairmont City, Illinois*. July.

CH2M HILL, Inc. (CH2M). 2020a. *Final Basis of Design Report, Surrounding Properties, Addendum 2, Old American Zinc Plant Site, Fairmont City, Illinois*. January.

CH2M HILL, Inc. (CH2M). 2020b. *Final Basis of Design Report, Surrounding Properties, Addendum 3, Old American Zinc Plant Site, Fairmont City, Illinois*. July.

CH2M HILL, Inc. (CH2M). 2021. *Uniform Federal Policy Quality Assurance Project Plan, Old American Zinc Plant Site, Fairmont City, Illinois*. October.

CH2M HILL, INC. (CH2M). 2022. *Data Evaluation Report, Old American Zinc Plant Site, Fairmont City, Illinois*. March.

ENTACT. 2009. *Final Remedial Investigation Report, Old American Zinc Plant Site, Fairmont City, Illinois*. March.

ENTACT. 2012. *Final Feasibility Study Document for the Old American Zinc Plant Site, Fairmont City, Illinois*. February.

U.S. Environmental Protection Agency (EPA). 2012. *Record of Decision, Old American Zinc Plant Superfund Site*. September.

Tables

Table 1. Final Cleanup Levels*Old American Zinc Plant Superfund Site*

Contaminant of Concern	Residential (mg/kg)	Nonresidential (mg/kg)
Arsenic	32	239
Cadmium	37	809
Lead	400	826
Zinc	6,400	306,600

mg/kg = milligrams per kilogram

Table 2. Summary of Samples
Old American Zinc Plant Superfund Site

Analyses	Total Arsenic, Cadmium, Lead, and Zinc
Method	Method ISM02.4a
Number of primary samples	176
Number of field duplicates	24
Number of matrix spike/matrix spike duplicates	13/11
Number of equipment blanks	3

Note: Includes primary and quality assurance/quality control samples from offsite properties.

^a Moisture content analysis was completed for samples undergoing total arsenic, cadmium, lead, and zinc analysis.

**Table 3. Laboratory Analytical Results for Properties
Greater than 5,000 Square Feet
Old American Zinc Plant Superfund Site**

			Arsenic (mg/kg)															
			A				B				C				D			
Property Address	Property ID	Exceeds?	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	0020	Yes	6.2	6.9	8.8	8	6.5	8.1	17	11	4	6.9	5.5	11	6.6	8.5	8.9	7.7
	0037	No	9.3	5.3	7.1	7.2	7.2	7.2	7	5.6	14 J	10	7	7.2	6.6	9.5	8.8	7.5
	0892	No	6.3	6.6	7.8	7	6.7	6.9	5.1	4.1	7.1	5.3	4.4	3.3	6.2	7.4	5.7	4.9
	0231	No	5.6	8.8	8	8.5	6.3	6	6.1	8.5	5.1	5.4	8	9.7	6.6	6.6	9.8	8.3
	0277	No	7.7	4.5	7.3	8.2	7.3	9.6	7.2	9	9	9.3	6.9	7	8.6	7.8	8	6.5
	1024	No	7	6.7	6.4	5.6	9.7	4.4	7.4	6.9	6	5.6	8.5	5.3	4.5	6	6.6	8.2
	0804	No	4.7	4.8	3.9	5.6	6.2	8.1	4.8	5.3	5.2	7.3	4.8	5.9	6.4	5.5	3	7.2
	0922	Yes	4.1	5.9	5.4	3.7	6.5	6.5	5.9	4.3	6 J	5.7	4.5	4.8	3.5	6.8	8.9 J	5
	0363	No	6.3	12	5.7	6.1	6.7	8.8	5.9	6.4	16	9.2	7.8	7.3	11	12	9.3	7
	0374	No	7.5	6.7	14	10	7.1	9.3	10	11	7.3	7.9	6.5	5.5	6.2	9.3	17	13
	0888	No	5.3	5.5	10	5.9	9.2	9.9	6.7	4.5	8.5	6.6	5.1	5.6	10	5.4	5.6	5.6

Notes:

" - inches below ground surface.

'-' - no data for depth interval or sample section.

J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram

Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

**Table 3. Laboratory Analytical Results for Properties
Greater than 5,000 Square Feet
Old American Zinc Plant Superfund Site**

Property Address	Property ID	Exceeds?	Cadmium (mg/kg)															
			A				B				C				D			
			0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	0020	Yes	7.6	5.1	14	26	9.6 J	17	64	8.3	2.7	2.9	7.4	33	8	4.7	8.5	1.6
	0037	No	23 J	3.7	5.9	6	12	10	2.8	7.5	23 J	2.5	1.4	1.3	7	6.6	4.1	1.7
	0892	No	13	9.9	9.5	23	20	8.2	5.4	3.2	16	16	10	0.8	6.7	9.9	4.9	6.3 J
	0231	No	3.2	6.6	7.8	8.3	2.9	2.6	2.1	7.1	3.2	4.7	8	5.2	8.9 J	9	8.2	4.2
	0277	No	6	2.3	5.8	6	4.8 J	7	4.7	6.5	6.6	7.2	2.8	1.3	6.7	5.8	2.8	2.3
	1024	No	12	4.9	1.2	0.82	30	8.3	5.9 J	1.8	6.9	4.9	3.2	1.9	11	8	3.1	1.1
	0804	No	1	0.96	11	3.6	1	16	11	26	2.1	13	7.9	15	2.1	1	12	34
	0922	Yes	16	26	7.1	7.7 J	53	7.4	16	1.9	23	19	7.1	7.7	15	9.8	15 J	18
	0363	No	20	13	4.7	2.1	19	13	2.5	6 J	23	21	7	10	20	16	8	8.1
	0374	No	11	9.3	35	17	6.5	15	11	20 J	13	11	2.6	4.2	11	10	18	7.4
	0888	No	10	11 J	13	4.9	13	13	13	2.3	9.2	7	7.9	1.3	13	6.8	4.9	1.5

Notes:

" - inches below ground surface.

'-' - no data for depth interval or sample section.

J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram

Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

**Table 3. Laboratory Analytical Results for Properties
Greater than 5,000 Square Feet
Old American Zinc Plant Superfund Site**

		Lead (mg/kg)																
		A				B				C				D				
	Property ID	Exceeds?	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"	0–6"	6–12"	12–18"	18–24"
	0020	Yes	98	150	270	110	170 J	120	770	120	45	53	99	180 J	110	47	42	16
	0037	No	130	37	42	56	230	26	31	21	320 J	44	25	22	140	91	95	47
	0892	No	140	100	120	140	160	52	32	28	150	110	50	12	130	120	58	51 J
	0231	No	34	56	48	45	29	22	24	42	29	33	50	25	62	58	52	20
	0277	No	71	23	57	55	46 J	71	39	41	57	52	20	19	68	38	16	18
	1024	No	200	36	18	15	390	280	120 J	27	95	47	42	30	320	55	58	19
	0804	No	17	19	150	23	22	200	46	67	30	180	66	100	34	18	61	190
	0922	Yes	240	420	330	210 J	470	400	480	260	470	610	270	350	210	200	450	260
	0363	No	200	44	25	21	190	74	16	64 J	110 J	100	59	27	220	76	54	24
	0374	No	96	68	240	98	100	380	220	27	190	230	27	21	76	110	270	36
	0888	No	69	38	170	28	200	97	130	18	110	78	27	17	190	45	40	14

Notes:

" - inches below ground surface.

'-' - no data for depth interval or sample section.

J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram

Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

**Table 3. Laboratory Analytical Results for Properties
Greater than 5,000 Square Feet
Old American Zinc Plant Superfund Site**

			Zinc (mg/kg)															
			A				B				C				D			
Property Address	Property ID	Exceeds?	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"	0-6"	6-12"	12-18"	18-24"
	0020	Yes	540	320	850	560	620	740	2500	350	170	170	330	740	470	280	410	150
	0037	No	920	260	280	210	800	400	170	330	1500 J	170	190	140	420	520	330	140
	0892	No	620	520	410	930	660	390	440	220	680	640	490	65	330	480	290	310
	0231	No	160	300	290	290	170	120	110	280	170	210	300	240	450	320	280	220
	0277	No	340	180	260	280	210 J	270	190	230	270 J	240	230	120	280	240	190	130
	1024	No	610	280	130	60	1600	930	1600 J	190	530	280	250	200	760	370	380	94
	0804	No	88	73	820	580 J	79	840	610	1200	140	1100	1200	1100	120	66	440	1400
	0922	Yes	1500	2100	2000	1500 J	1900	790	1300	680	1200	1100	480	760	880	710	1200	1100
	0363	No	1300	360	300	220	670	390	220	300 J	590	550	300	320	560	430	400	370
	0374	No	620	380	1800	380	480	1700	570	2400 J	700	590	140	170	390	670	1100	520
	0888	No	370	380 J	410	250	530	450	540	170	380	330	430	77	530	270	300	190

Notes:

" - inches below ground surface.

'-' - no data for depth interval or sample section.

J - the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

U - the analyte was analyzed for but was not detected above the reported sample quantitation limit or the analyte concentration is less than five times the blank concentration.

mg/kg - milligrams per kilogram

Results equal to or exceeding the cleanup levels are shaded.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

Table 4. Summary of Soil Results on a Per-Sample Basis*Old American Zinc Plant Superfund Site*

	Arsenic	Cadmium	Lead	Zinc
Residential Samples Analyzed	176	176	176	176
Residential Samples Exceeding Cleanup Levels	0	2	8	0
Residential Range of Concentrations (mg/kg)	3 - 17	0.8 - 64	12 - 770	60 - 2,500
Residential Average Concentration (mg/kg)	7.20	9.70	110	530

Notes:

Tables 3-1, 3-2, 3-3 and 3-4 include soil results for properties sampled.

This table includes 176 primary samples collected in 2022. The greater of a normal or field duplicate result was used in these calculations.

Cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

mg/kg = milligrams per kilogram

Table 5. Summary of Soil Results on a Per-Property Basis*Old American Zinc Plant Superfund Site*

	Arsenic	Cadmium	Lead	Zinc
Residential Properties Analyzed	11	11	11	11
Residential Properties Exceeding Remediation Goal	0	2	2	0

Notes:

Tables 3-1, 3-2, 3-3 and 3-4 include soil results for properties sampled.

This table includes 176 primary samples collected in 2022. The greater of a normal or field duplicate result was used in these calculations.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead and 6,400 mg/kg for zinc.

mg/kg = milligrams per kilogram

Table 6. Summary of Soil Sampling Results Exceeding Cleanup Levels
Old American Zinc Plant Superfund Site

Depth (inches below ground)	Arsenic			Cadmium			Lead			Zinc		
	Number of Samples Exceeding CL	Number of Samples Collected	Exceedance Frequency per Depth	Number of Samples Exceeding CL	Number of Samples Collected	Exceedance Frequency per Depth	Number of Samples Exceeding CL	Number of Samples Collected	Exceedance Frequency per Depth	Number of Samples Exceeding CL	Number of Samples Collected	Exceedance Frequency per Depth
Residential Properties												
0–6	0	44	0.0%	1	44	2.3%	2	44	4.5%	0	44	0.0%
6–12	0	44	0.0%	0	44	0.0%	3	44	6.8%	0	44	0.0%
12–18	0	44	0.0%	1	44	2.3%	3	44	6.8%	0	44	0.0%
18–24	0	44	0.0%	0	44	0.0%	0	44	0.0%	0	44	0.0%
Total	0	176	0.0%	2	176	1.1%	8	176	4.5%	0	176	0.0%

Notes:

Exceedance Frequency represents the number of exceedences per 100 samples.

Residential cleanup levels are 32 mg/kg for arsenic, 37 mg/kg for cadmium, 400 mg/kg for lead, and 6,400 mg/kg for zinc.

This table includes 176 primary samples collected in 2022. The greater of a normal or field duplicate result was used in these calculations.

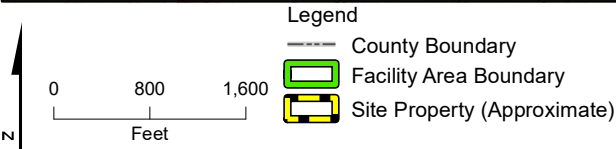
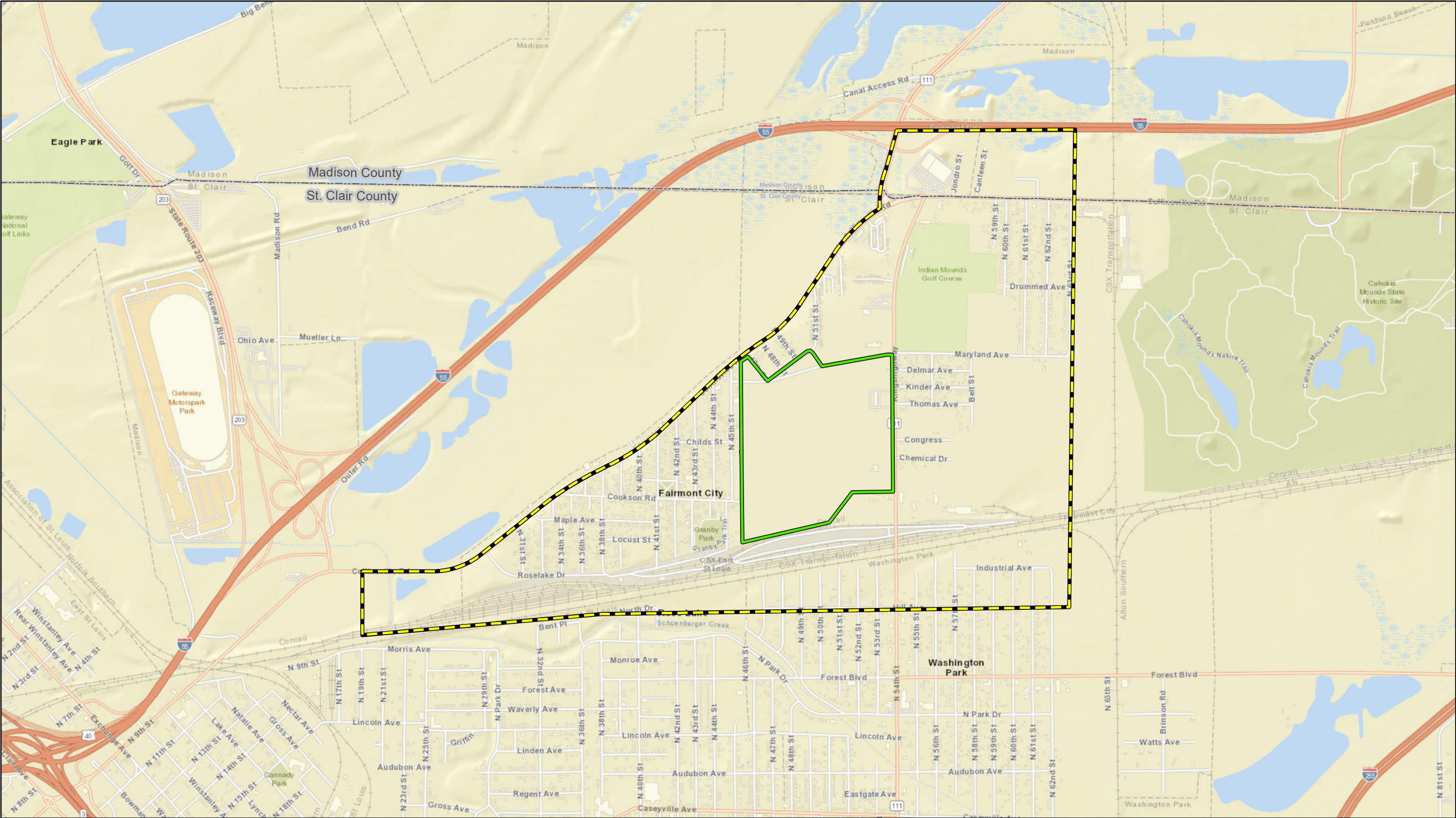
mg/kg = milligrams per kilogram

NA = not applicable

Table 7. Properties Above Cleanup Levels
Old American Zinc Plant Superfund Site

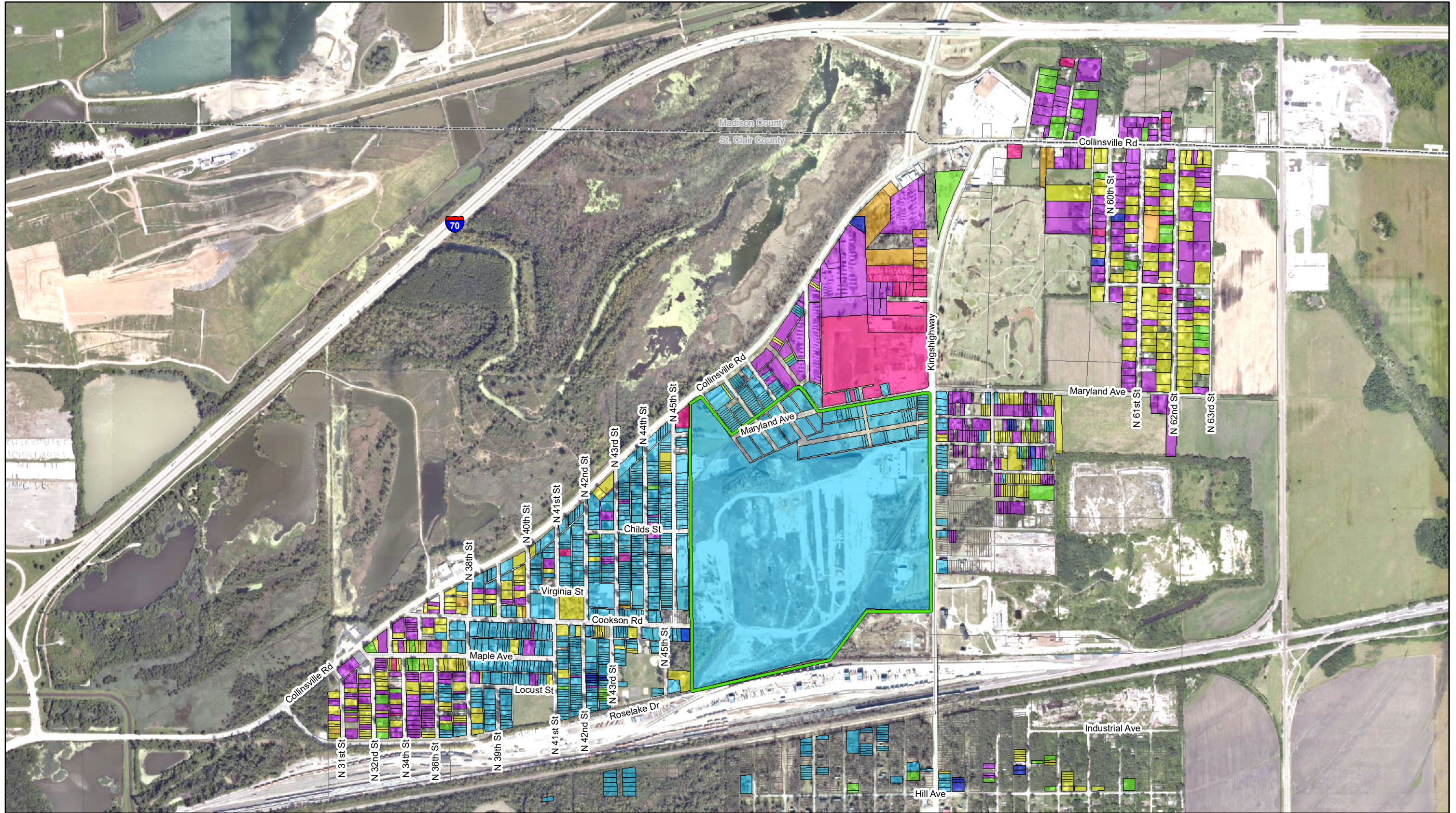
Property Address	Unique ID	Number of Parcels	Parcel IDs	Arsenic Exceedance	Cadmium Exceedance	Lead Exceedance	Zinc Exceedance
	0020	1	02100101070		x	x	
	0037	2	02100105077, 02100105076				
	0892	1	02090107059				
	0231	1	02030101015				
	0277	1	02030102010				
	1024	1	172203403301018				
	0804	1	2090110013				
	0922	1	02040203059		x	x	
	0363	4	02030303006, 02030303007, 02030303008, 02030303009				
	0374	2	02030305015, 02030305057				
	0888	4	02090107026, 02090107027, 02090107028, 02090107029				

Figures



Note:
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

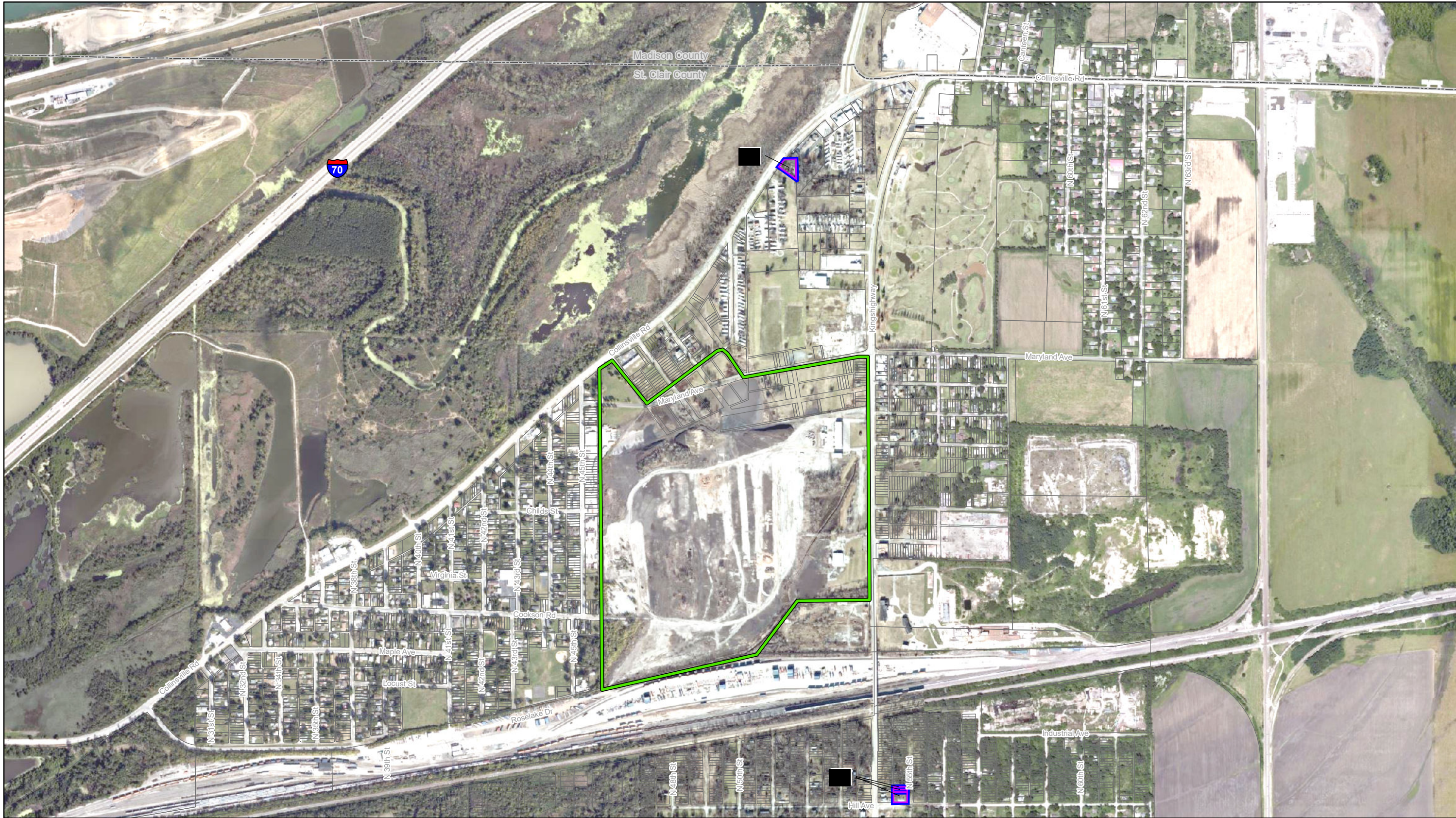
Figure 1
Site Map
Old American Zinc Plan Superfund Site
Fairmont City, St. Clair County, Illinois



- Legend**
- County Boundary
 - Parcel Boundary
 - 2017 CH2M Sampled Property
 - 2018 CH2M Sampled Property
 - 2019 CH2M Sampled Property
 - 2020 CH2M Sampled Property
 - 2021 CH2M Sampled Property
 - 2022 CH2M Sampled Property
 - Entact Sampled Property
 - Facility Area Boundary

Note:
Bing Aerial Imagery, 2021.

Figure 2
CH2M and Entact Sampled Properties
2/10/2023
Old American Zinc Plant Superfund Site
Fairmont City, St. Clair County, Illinois
ch2m



0 450 900
Feet

Legend

County Boundary

Parcel Boundary

Facility Area Boundary

Property with Cadmium Concentrations Above Residential Soil Cleanup Level

Property with Lead Concentrations Above Residential Soil Cleanup Level

- Notes:
1. Bing Aerial Imagery, 2021.
 2. Results for each property are located in Tables 3-1 through 3-3.
 3. Offsite property results were screened against the residential soil cleanup level based on human health risk. Cadmium = 37 mg/kg

Figure 3
 2022 Sampling - Arsenic, Cadmium, and Lead Concentrations Above Residential Soil Cleanup Level
 Old American Zinc Plan Superfund Site
 Fairmont City, St. Clair County, Illinois

Attachment 1
Data Quality Evaluation



Memorandum

CH2M HILL, Inc.
6312 S. Fiddler's Green Circle
Suite 300N
Greenwood Village, CO
80111

Subject: Data Quality Evaluation for Old American Zinc Plant Superfund Site 2022

Project Name: Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County and Madison County, Illinois
Task Order No. 68HE0521F0068/Contract No. 68HE0318D0004

Attention: Sheila Desai/U.S. Environmental Protection Agency (EPA)

From: Shane Lowe//CH2M HILL, Inc. (CH2M)¹

Date: March 21, 2023

The objective of this data quality evaluation (DQE) report is to assess the data quality of analytical results for soil samples collected from the Old American Zinc Plant Superfund Site in Fairmont City, Illinois. CH2M collected soil samples December 13 to December 15, 2022. Guidance for this DQE report came from the *Old American Zinc Plant Superfund Site, Remedial Design Surrounding Area Support Quality Assurance Project Plan (QAPP)* (CH2M, 2021); and the U.S. Environmental Protection Agency (EPA) *Contract Laboratory National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review* (EPA 2020).

The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability, and completeness (PARCC) as presented in the QAPP. This report is intended as a general data quality assessment designed to summarize data issues.

1. Analytical Data

This DQE report covers 176 native soil samples, 24 field duplicates (FDs) and three aqueous equipment blanks (EB). Because of a Scribe error, matrix spike (MS) samples were not correctly identified on the chain-of-custody form and therefore, were not analyzed as an MS but as a native soil sample; however, the laboratory selected samples at the required frequency to analyze as the MS as part of their quality control (QC) program. The samples were reported in 11 sample delivery groups listed in Table 1. Samples were analyzed through the EPA Contract Laboratory Program. The samples were analyzed for arsenic, cadmium, lead, and zinc by Method SFAM01.1.

One-hundred percent of the analytical data underwent a Stage 2B validation using a combination of EPA's Electronic Data Exchange and Evaluation System data review software and manual review. The sample delivery groups were assessed by reviewing the following: the chain-of-custody documentation, holding-time compliance, initial and continuing calibration criteria, method blanks/field blanks, laboratory control spike sample (LCS) recoveries, MS recoveries, FD precision, and the required QC samples at the specified frequencies. In addition, 10 percent of the analytical data underwent a Stage 3 validation to verify accuracy of the sample and QC calculations.

¹ CH2M HILL, Inc. is a wholly owned subsidiary of Jacobs Solutions Inc.

Data validation flags were assigned according to the project QAPP. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will only be one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data validation flags are defined as follows:

- J = Estimated: The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- J+ = Estimated high: The analyte was positively identified; the quantitation is a high estimation because of discrepancies in meeting certain analyte-specific QC criteria.
- J- = Estimated low: The analyte was positively identified; the quantitation is a low estimation because of discrepancies in meeting certain analyte-specific QC criteria.
- U = Undetected: The analyte was analyzed for, but not detected or is qualified as a nondetect because of blank contamination.

2. Stage 2B Validation

The overall summaries of the data validation are contained in the following subsections. Table 2 presents qualified data.

2.1 Holding Time/Preservation

All acceptance criteria were met.

2.2 Calibration

Initial and continuing calibration analyses were performed as required by the method, and acceptance criteria were met, with the following exceptions:

- Arsenic was detected at concentrations less than the reporting limit (RL) in a few initial calibration (ICB) and continuing calibration blanks. The data were not qualified because the associated sample concentrations were greater than the RL and respective blank concentrations.

2.3 Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination, with the following exceptions:

- Arsenic was detected at concentrations less than the RL in a few method blanks. The data were not qualified because the associated sample concentrations were greater than the reporting limits and respective blank concentrations.

2.4 Laboratory Control Samples

LCSs were analyzed as required, and all accuracy and precision criteria were met.

2.5 Matrix Spike

MS samples were analyzed as required, and all accuracy criteria were met, with the following exceptions:

- Arsenic and cadmium were recovered less than the lower control limits in the MS for sample EYEE1, indicating a possible low bias. The data were qualified as estimated detected results and flagged “J” in the parent sample.
- Zinc was recovered less than the lower control limit in the MS for sample EYEH1, indicating a possible low bias. The result was qualified as estimated and flagged “J” in the parent sample.
- There were a few instances where the MS for lead and zinc did not meet control limits because of concentrations in the parent samples being greater than four times the spike concentration. The associated data were not qualified.

2.6 Serial Dilutions

Serial dilutions were analyzed as required, and precision criteria were met.

2.7 Post-Digestion Spikes

Post-digestion spikes (PDS) were analyzed as required, and accuracy criteria were met.

2.8 Interference Check Standards

Interference check standards (ICSs) were analyzed at the required frequency, and all acceptance criteria were met.

2.9 Field Duplicates

FDs were collected as required, and precision criteria were met, with the following exceptions:

- There were multiple instances where the relative percent differences (RPDs) for arsenic, cadmium, lead, and zinc exceeded control limits in the FD pairs. The data were qualified as estimated detected results and flagged “J” in the respective FD pairs.

2.10 Laboratory Duplicates

Laboratory duplicates were performed as required by the method, and precision criteria were met.

2.11 Field Blanks

EBs were collected, analyzed, and were free of contamination with the following exception:

- Zinc was detected at concentrations less than the RL in two EBs. The data were not qualified because the associated sample concentrations were greater than the RL and respective blank concentrations.

2.12 Chain of Custody

Required procedures were followed and were free of errors.

2.13 Sample Quantitation

Because of an entry error, the samples designated as the MS were incorrectly logged into the Scribe database, resulting in the samples being analyzed as a normal sample by the laboratory. This resulted in duplicate concentrations being reported for the “parent” samples. CH2M assessed these as additional FD samples and applied validation flags if required.

2.14 Stage 3 Data Validation

Stage 3 validation was performed on 10 percent of the analytical data. No additional data issues were noted during the Stage 3 validation.

2.15 Overall Assessment

The goal of this assessment is to demonstrate that a sufficient number of representative samples was collected, and the resulting analytical data can be used to support the decision-making process.

The following summary highlights the PARCC findings for the previously defined events:

- Precision of the data was verified through the review of the field and laboratory data quality indicators that include: FD, laboratory duplicate, and serial dilution RPDs. Precision was acceptable; however, a total of 60 results for arsenic cadmium, lead, and/or zinc, out of 800 results analyzed, were qualified as estimated concentrations because of FD RPD issues. Data users should consider the impact to any result that is qualified as estimated as it may contain a bias that could affect the decision-making process.
- Accuracy of the data was verified through the review of the calibration data, LCS, MS, ICS, and PDS recoveries, as well as the review of method/calibration/equipment blank data. Accuracy was acceptable; however, one result for arsenic, cadmium and zinc out of 800 results analyzed was qualified as estimated concentrations because of MS issues. Arsenic and/or zinc were detected in several calibration and/or EBs at concentrations less than the RL; however, the data were not qualified because the associated sample concentrations were greater than the RLs and respective blank concentrations.
- Representativeness of the data was verified through the sample's collection, storage, and preservation procedures and the verification of holding-time compliance. The laboratory did not note any issues related to sample preservation or storage of the samples. All data were reported from analyses within the EPA recommended holding time.
- Comparability of the data was ensured through the use of standard EPA analytical procedures. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.
- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for project use. All data were considered valid. The completeness goal of 90 percent was met for all analytes.

References

CH2M HILL. Inc. (CH2M). *Old American Zinc Plant Superfund Site, Remedial Design Surrounding Area Support Quality Assurance Project Plan*.

U.S. Environmental Protection Agency (EPA). 2020. *Contract Laboratory National Functional Guidelines (NFG) for Inorganic Superfund Methods Data Review*. November.

Tables

Table 1. Sample Delivery Groups

Old American Zinc Plant Superfund Site, Fairmont City, Illinois

EYE69	EYE90	EYEB0	EYED0	EYEE2	EYEG2	EYEJ2
EYEL2	EYEM4	EYEP4	EYER4			

Table 2. Data Qualification Summary*Old American Zinc Superfund Site, Fairmont City, Illinois*

Address	Location ID	Sample ID	Analyte	Final Result	Units	Validation Flag	Validation Reasons
	FD-003-20221215	EYEP9	Lead	98	mg/kg	J	FD>RPD
	FD-003-20221215	EYEP9	Cadmium	5.4	mg/kg	J	FD>RPD
	OAZ-0020B-00/06	EYEP8	Lead	170	mg/kg	J	FD>RPD
	OAZ-0020B-00/06	EYEP8	Cadmium	9.6	mg/kg	J	FD>RPD
	OAZ-0020C-18/24	EYEQ6	Lead	180	mg/kg	J	FD>RPD
	OAZ-0020C-18/24	EYEQ8	Lead	41	mg/kg	J	FD>RPD
	FD-004-20221215	EYER3	Cadmium	12	mg/kg	J	FD>RPD
	FD-005-20221215	EYES2	Lead	320	mg/kg	J	FD>RPD
	FD-005-20221215	EYES2	Arsenic	14	mg/kg	J	FD>RPD
	FD-005-20221215	EYES2	Cadmium	23	mg/kg	J	FD>RPD
	FD-005-20221215	EYES2	Zinc	1500	mg/kg	J	FD>RPD
	OAZ-0037A-00/06	EYER2	Cadmium	23	mg/kg	J	FD>RPD
	OAZ-0037C-00/06	EYES1	Lead	38	mg/kg	J	FD>RPD
	OAZ-0037C-00/06	EYES1	Arsenic	7.6	mg/kg	J	FD>RPD
	OAZ-0037C-00/06	EYES1	Cadmium	5.5	mg/kg	J	FD>RPD
	OAZ-0037C-00/06	EYES1	Zinc	300	mg/kg	J	FD>RPD
	FD-001-20221213	EYE89	Lead	51	mg/kg	J	FD>RPD
	FD-001-20221213	EYE89	Cadmium	6.3	mg/kg	J	FD>RPD
	OAZ-0892D-18/24	EYE73	Lead	12	mg/kg	J	FD>RPD
	OAZ-0892D-18/24	EYE73	Cadmium	1.9	mg/kg	J	FD>RPD

Table 2. Data Qualification Summary*Old American Zinc Superfund Site, Fairmont City, Illinois*

Address	Location ID	Sample ID	Analyte	Final Result	Units	Validation Flag	Validation Reasons
	FD-005-20221214	EYEK2	Cadmium	8.9	mg/kg	J	FD>RPD
	OAZ-0231D-00/06	EYEK1	Cadmium	5.3	mg/kg	J	FD>RPD
	FD-003-20221214	EYEG7	Lead	46	mg/kg	J	FD>RPD
	FD-003-20221214	EYEG7	Cadmium	4.8	mg/kg	J	FD>RPD
	FD-003-20221214	EYEG7	Zinc	210	mg/kg	J	FD>RPD
	OAZ-0277B-00/06	EYEG6	Lead	14	mg/kg	J	FD>RPD
	OAZ-0277B-00/06	EYEG6	Cadmium	1.3	mg/kg	J	FD>RPD
	OAZ-0277B-00/06	EYEG6	Zinc	88	mg/kg	J	FD>RPD
	OAZ-0277C-00/06	EYEH1	Zinc	270	mg/kg	J	MS<LCL
	FD-001-20221214	EYEF0	Lead	120	mg/kg	J	FD>RPD
	FD-001-20221214	EYEF0	Cadmium	5.9	mg/kg	J	FD>RPD
	FD-001-20221214	EYEF0	Zinc	1600	mg/kg	J	FD>RPD
	OAZ-1024B-12/18	EYEE9	Lead	41	mg/kg	J	FD>RPD
	OAZ-1024B-12/18	EYEE9	Cadmium	2.6	mg/kg	J	FD>RPD
	OAZ-1024B-12/18	EYEE9	Zinc	320	mg/kg	J	FD>RPD
	OAZ-0804A-18/24	EYEB0	Zinc	580	mg/kg	J	FD>RPD
	OAZ-0804A-18/24	EYEB1	Zinc	81	mg/kg	J	FD>RPD
	FD-006-20221213	EYED5	Arsenic	6	mg/kg	J	FD>RPD
	OAZ-0922A-18/24	EYEC8	Cadmium	1.6	mg/kg	J	FD>RPD
	OAZ-0922A-18/24	EYEC9	Cadmium	7.7	mg/kg	J	FD>RPD

Table 2. Data Qualification Summary*Old American Zinc Superfund Site, Fairmont City, Illinois*

Address	Location ID	Sample ID	Analyte	Final Result	Units	Validation Flag	Validation Reasons
	OAZ-0922A-18/24	EYEC8	Lead	34	mg/kg	J	FD>RPD
	OAZ-0922A-18/24	EYEC9	Lead	210	mg/kg	J	FD>RPD
	OAZ-0922A-18/24	EYEC8	Zinc	500	mg/kg	J	FD>RPD
	OAZ-0922A-18/24	EYEC9	Zinc	1500	mg/kg	J	FD>RPD
	OAZ-0922C-00/06	EYED4	Arsenic	3.5	mg/kg	J	FD>RPD
	OAZ-0922D-12/18	EYEE1	Arsenic	8.9	mg/kg	J	MS<LCL
	OAZ-0922D-12/18	EYEE1	Cadmium	15	mg/kg	J	MS<LCL
	FD-001-20221215	EYEM1	Lead	110	mg/kg	J	FD>RPD
	OAZ-0363B-18/24	EYEL3	Cadmium	2.2	mg/kg	J	FD>RPD
	OAZ-0363B-18/24	EYEL4	Cadmium	6.0	mg/kg	J	FD>RPD
	OAZ-0363B-18/24	EYEL3	Lead	19	mg/kg	J	FD>RPD
	OAZ-0363B-18/24	EYEL4	Lead	64	mg/kg	J	FD>RPD
	OAZ-0363B-18/24	EYEL3	Zinc	150	mg/kg	J	FD>RPD
	OAZ-0363B-18/24	EYEL4	Zinc	300	mg/kg	J	FD>RPD
	OAZ-0363C-00/06	EYEL5	Lead	62	mg/kg	J	FD>RPD
	OAZ-0374B-18/24	EYEN4	Cadmium	20	mg/kg	J	FD>RPD
	OAZ-0374B-18/24	EYEN5	Cadmium	5.7	mg/kg	J	FD>RPD
	OAZ-0374B-18/24	EYEN4	Zinc	2400	mg/kg	J	FD>RPD
	OAZ-0374B-18/24	EYEN5	Zinc	500	mg/kg	J	FD>RPD

Table 2. Data Qualification Summary

Old American Zinc Superfund Site, Fairmont City, Illinois

Address	Location ID	Sample ID	Analyte	Final Result	Units	Validation Flag	Validation Reasons
	FD-003-20221213	EYEA3	Cadmium	4.3	mg/kg	J	FD>RPD
	FD-003-20221213	EYEA3	Zinc	190	mg/kg	J	FD>RPD
	OAZ-0888A-06/12	EYEA2	Cadmium	11	mg/kg	J	FD>RPD
	OAZ-0888A-06/12	EYEA2	Zinc	380	mg/kg	J	FD>RPD

FD = field duplicate

mg/kg = milligram(s) per kilogram

QC = quality control

RPD = relative percent difference

Validation Reasons:

FD>RPD = The RPD between the parent sample and FD exceeded QC criteria

Attachment 2
Photo Log

Project Title	Data Evaluation Report, 2022 Residential Soil Sampling
Location	Old American Zinc Plant Superfund Site, Fairmont City, St. Clair County and Madison County, Illinois
Date	February 16, 2023

Photograph 1: Yard showing utility markings.



Photograph 2: Yard showing sampling flags.



Photograph 3: Sampling setup.



Photograph 4: Sampling setup.



Photograph 5: Sampling setup.

**Photograph 6: Sampling flags and property corner stakes**

Photograph 7: Yard Sampling.



Photograph 8: Yard sampling flags.



Attachment 3
Field Logbooks

Location

Fairmont City

Project / Client

Date

12-15-22

1300	Collect	GAZ-0020A-00/06
1305		GAZ-0020A-06/12
1310		GAZ-0020A-12/18
1315		GAZ-0020A-18/24
1320	Collect	GAZ-0020B-00/06
1323		GAZ-0020B-00/06-R
1325		GAZ-0020B-06/12
1330		GAZ-0020B-12/18
1335		GAZ-0020B-18/24
1340	Collect	GAZ-0020C-00/06
1345		GAZ-0020C-06/12
1350		GAZ-0020C-12/18
1355		GAZ-0020C-18/24
1355		GAZ-0020C-18/24 MS
1400	Collect	GAZ-0020D-00/06
1405	Collect	GAZ-0020D-06/12
1410	Collect	GAZ-0020D-12/18
1415		GAZ-0020D-18/24

1440 Begin Sampling.

1533 Sampling Complete, pull
Flags & Backfill Borings with
Cuttings. Auger was Decanned
Between each sample, & wash
water was left on ground.

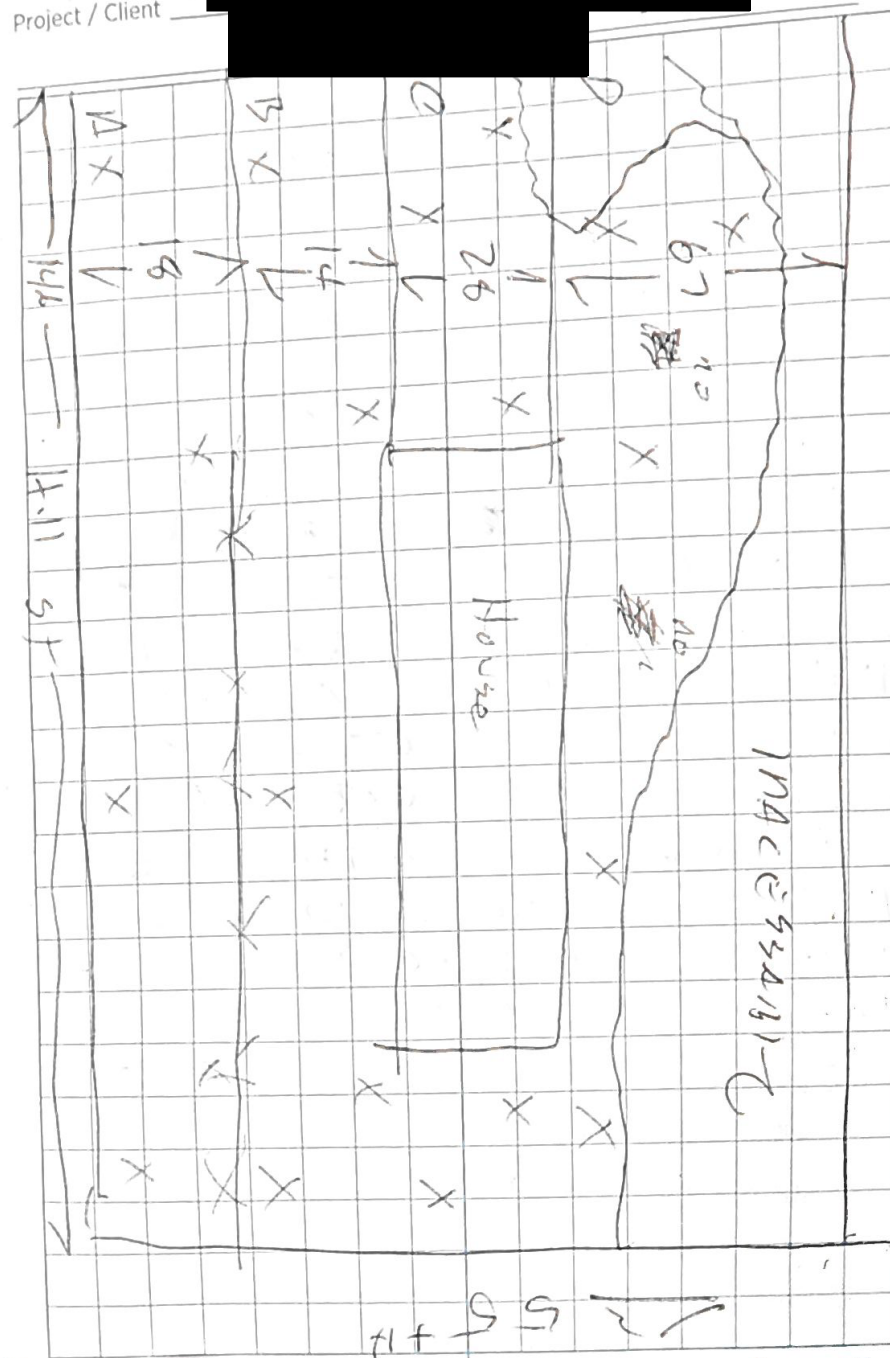
Location

Fairmont City

Date

12-15-22

Project / Client



Rite in the Rain

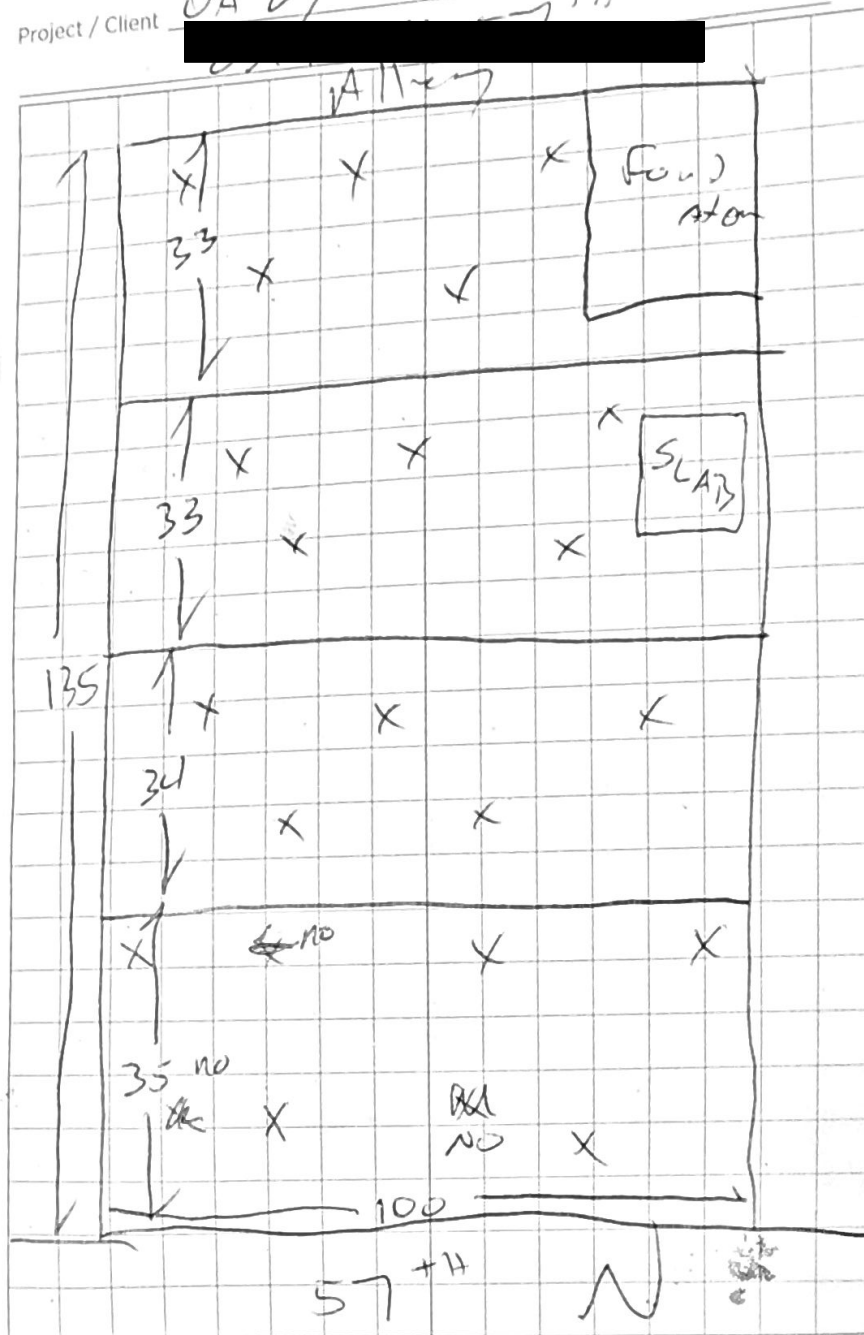
Location Washington Park Date 12-15-22
 Project / Client OAZ / USAID

1440 Collect OAZ-0037A-00/06
 1445 OAZ-0037A-00/06-R
 1450 OAZ-0037A-06/12
 1455 OAZ-0037A-12/18
 1500 OAZ-0037A-18/24
 1503 Collect OAZ-0037B-00/06
 1505 OAZ-0037B-06/12
 1508 OAZ-0037B-12/18
 1510 OAZ-0037B-18/24
 1513 Collect OAZ-0037C-00/06
 1515 OAZ-0037C-00/06-R
 1518 OAZ-0037C-06/12
 1520 OAZ-0037C-12/18
 1523 OAZ-0037C-18/24
 1525 Collect OAZ-0037D-00/06
 1528 OAZ-0037D-06/12
 1530 OAZ-0037D-12/18
 1533 OAZ-0037D-18/24
 1533 OAZ-0037D-18/24-13

* 1130 Collect EB

1550 All offsite

Location Washington Park Date 12-15-22⁸⁵
 Project / Client OAZ / USAID



Location

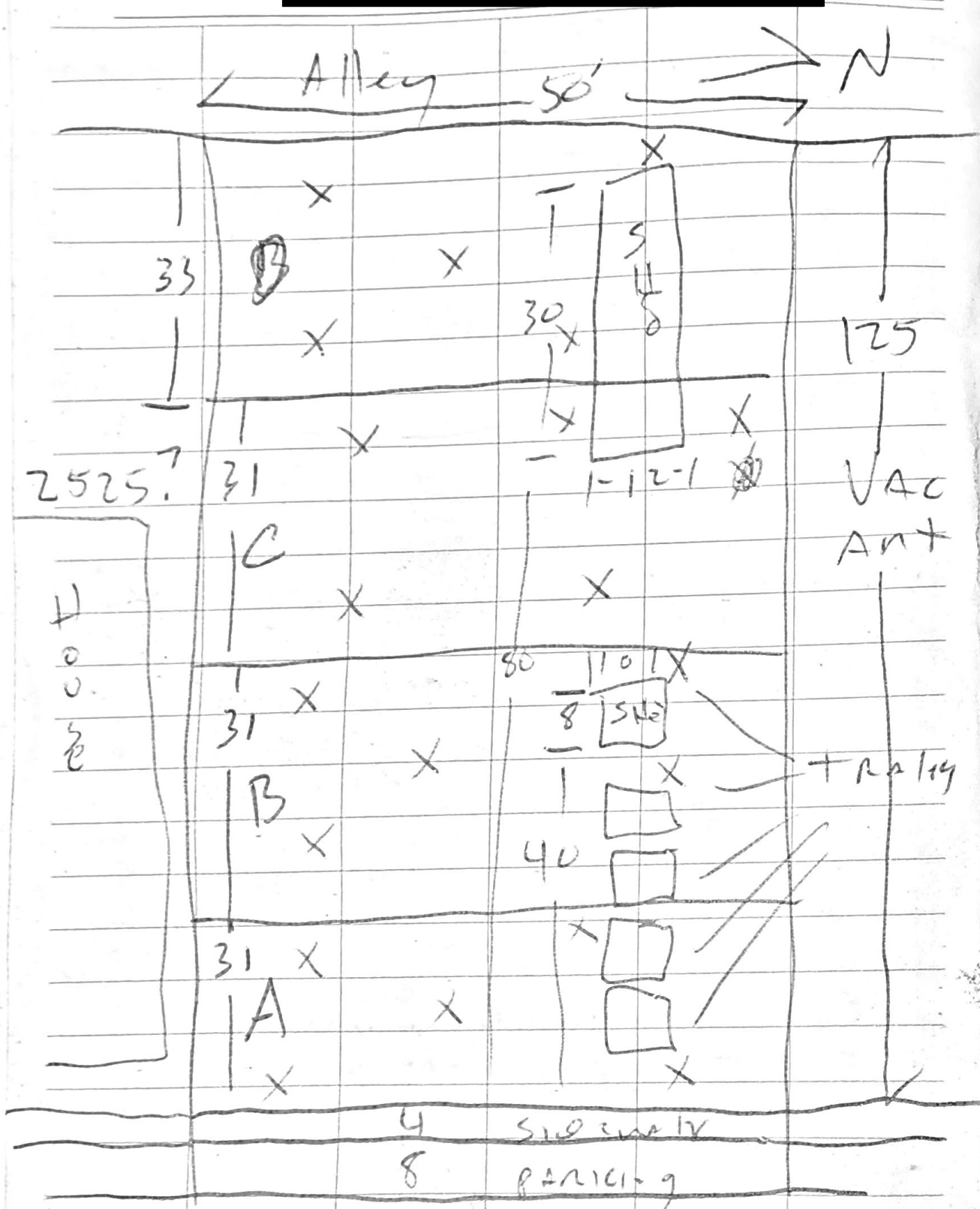
Fairmont city

Date

12.14.22

Project / Client

OAR / USEPA

Location
Project /

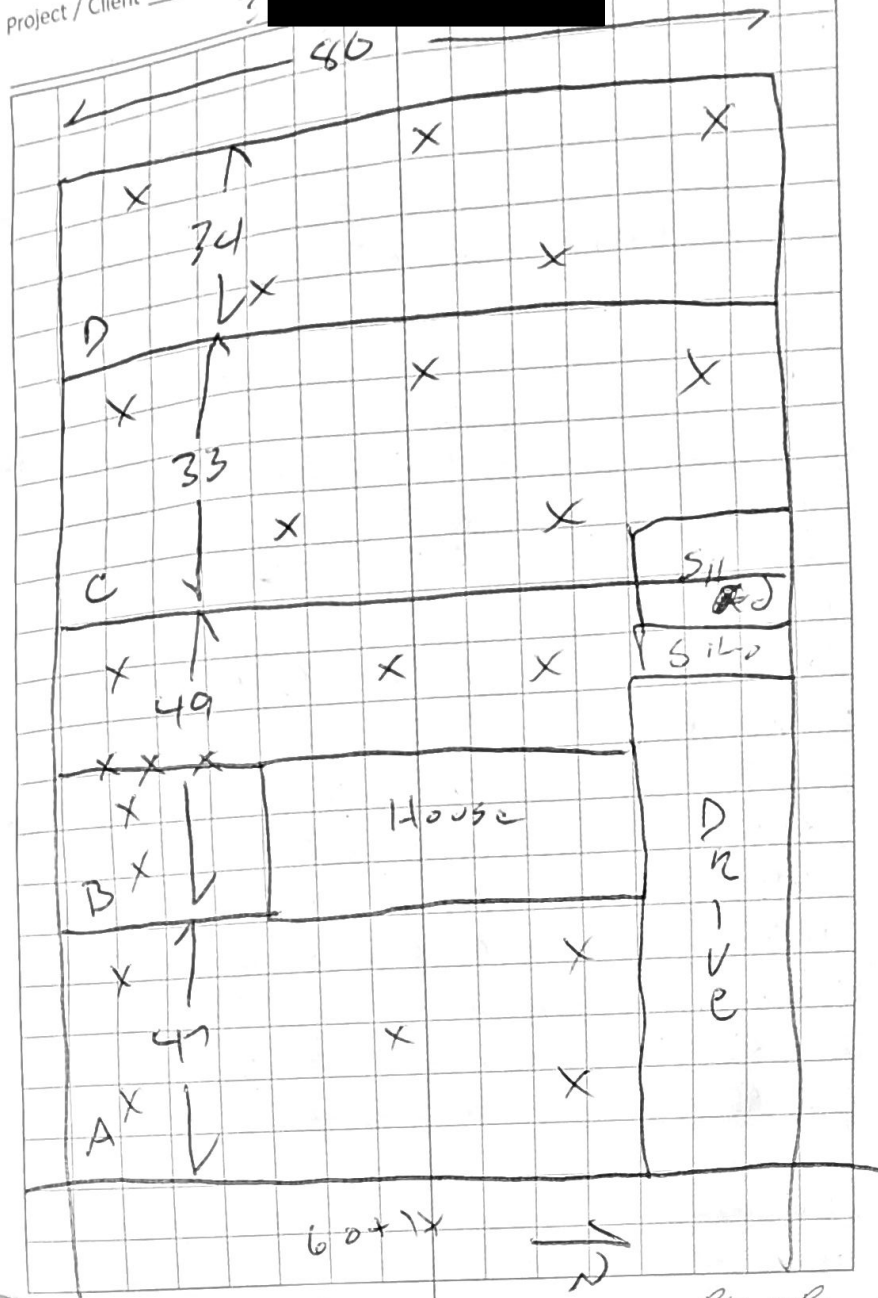
125

Location FAIRMONT city Date 12-14-22
 Project / Client OAZ / USEPA

1035	Collect	OAZ-0277A-00/06
1038		OAZ-0277A-00/06-R
1040		OAZ-0277A-06/12
1043		OAZ-0277A-12/18
1045		OAZ-0277A-18/24
1050	Collect	OAZ-0277B-00/06
1053		OAZ-0277B-00/06-R
1055		OAZ-0277B-06/12
1058		OAZ-0277B-12/18
1100		OAZ-0277B-18/24
1105	Collect	OAZ-0277C-00/06
1108		OAZ-0277C-06/12
1110		OAZ-0277C-12/18
1113		OAZ-0277C-18/24
1115		OAZ-0277C-18/24-MS
1120	Collect	OAZ-0277D-00/06
1125		OAZ-0277D-06/12
1130		OAZ-0277D-12/18
1135		OAZ-0277D-18/24

1350 Rain Begins, All exit

Location FAIRMONT city Date 12-14-22
 Project / Client OAZ [REDACTED] ST



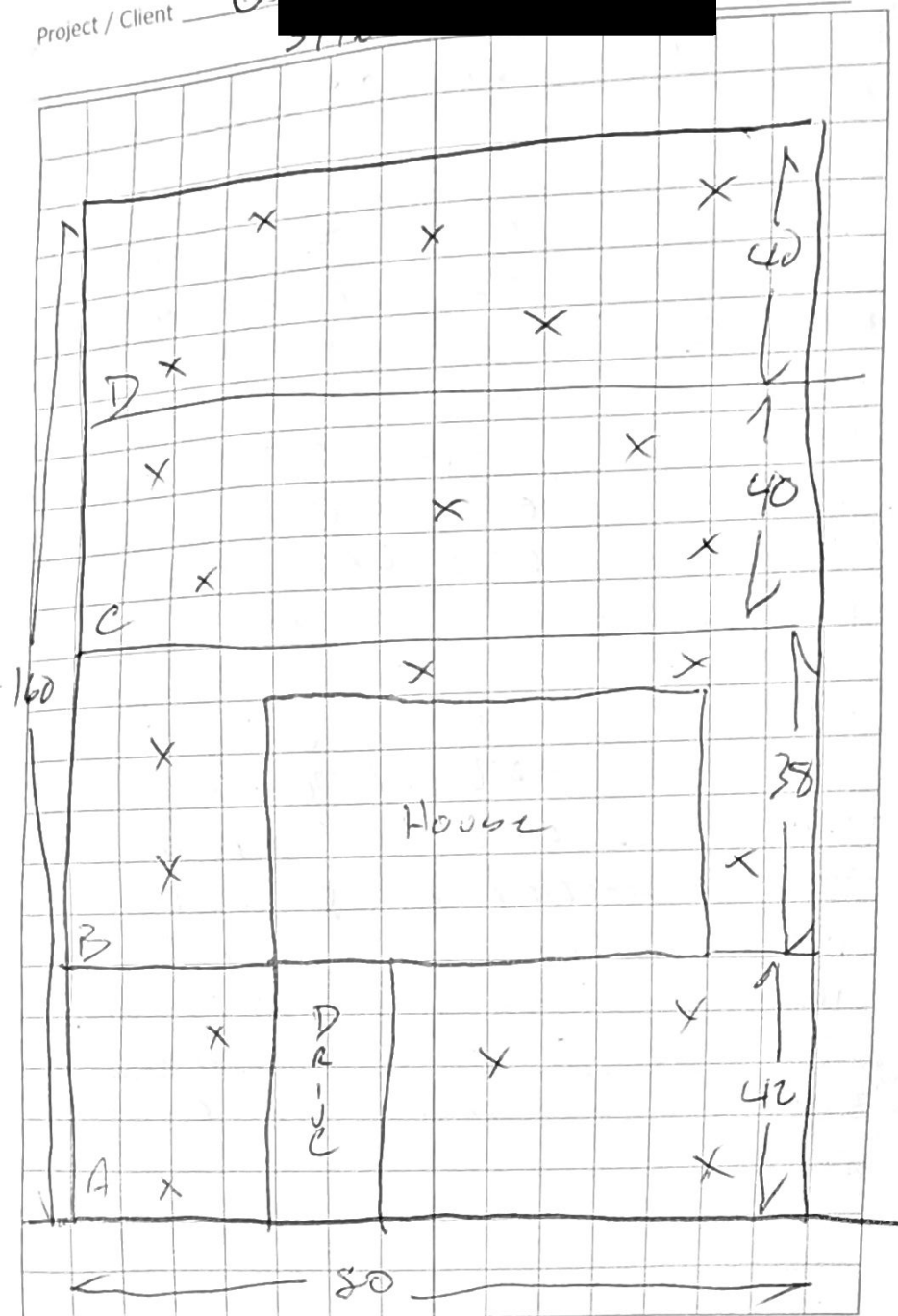
Location Fairmont City Date 12-14-22
 Project / Client OAZ / USEPA

0900	Collect	OAZ-1024A-00/06
0905		OAZ-1024A-06/12
0910		OAZ-1024A-12/18
0915		OAZ-1024A-18/24
0918	Collect	OAZ-1024B-00/06
0920		OAZ-1024B-06/12 *
0925		OAZ-1024B-12/18
0927		OAZ-1024B-12/18-R
0930		OAZ-1024B-18/24
0933	Collect	OAZ-1024C-00/06
0935		OAZ-1024C-06/12
0938		OAZ-1024C-12/18
0940		OAZ-1024C-18/24- ²
0943		OAZ-1024C-18/24-MS
0945	Collect	OAZ-1024D-00/06
0950		OAZ-1024D-06/12
0955		OAZ-1024D-12/18
1000		OAZ-1024D-18/24

1245 At [REDACTED] Set
 Flags

1350 Complete, full flags,
 Backpack banners with excess
 soil, Augers down between
 each sample

Location Fairmont City Date 12-14-21
 Project / Client OAZ / USEPA



Location

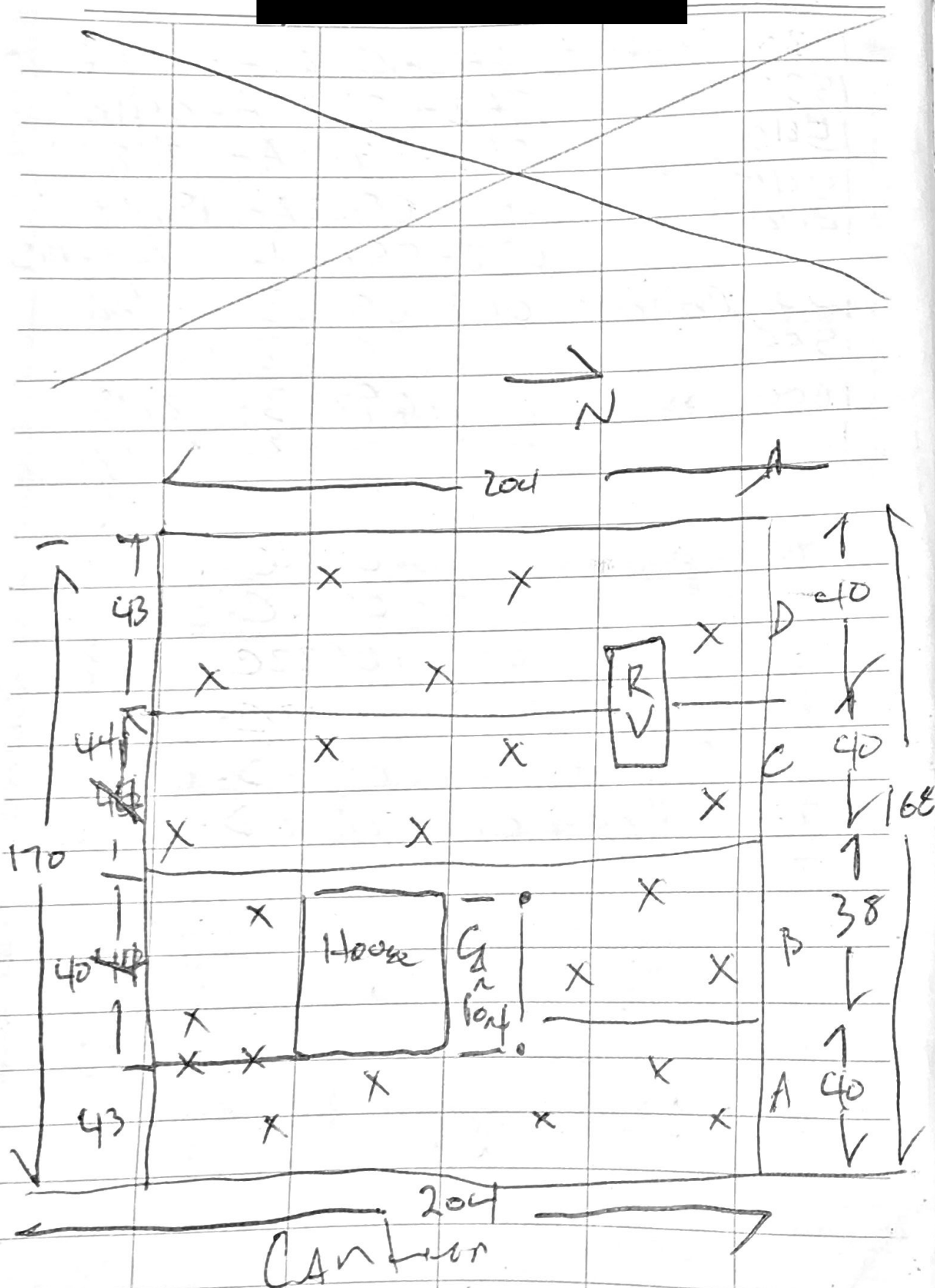
Fairmont City

Date

12-14-22

Project / Client

OAR / USEPA



Location

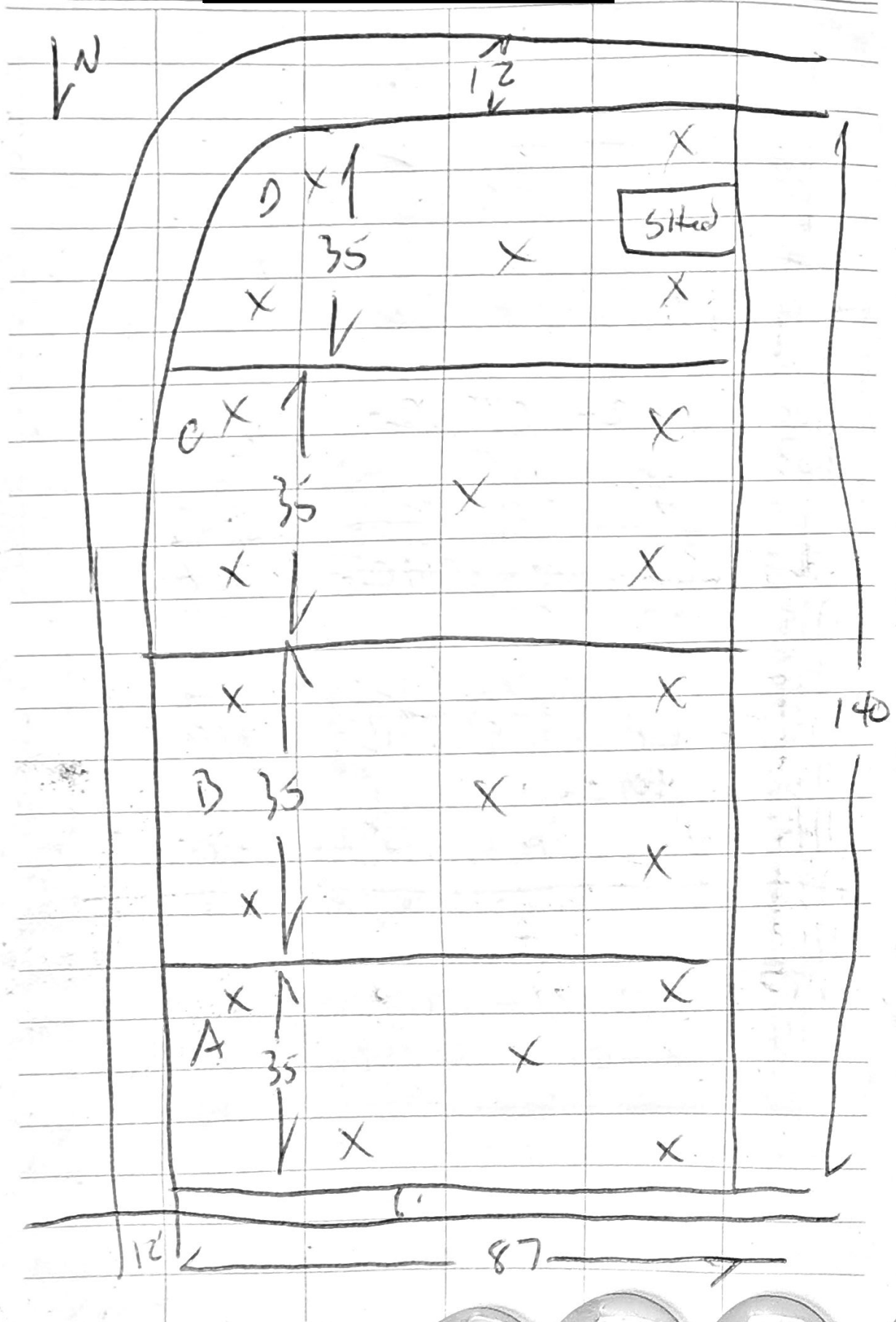
Fairmont City

Date

12-13-22

Project / Client

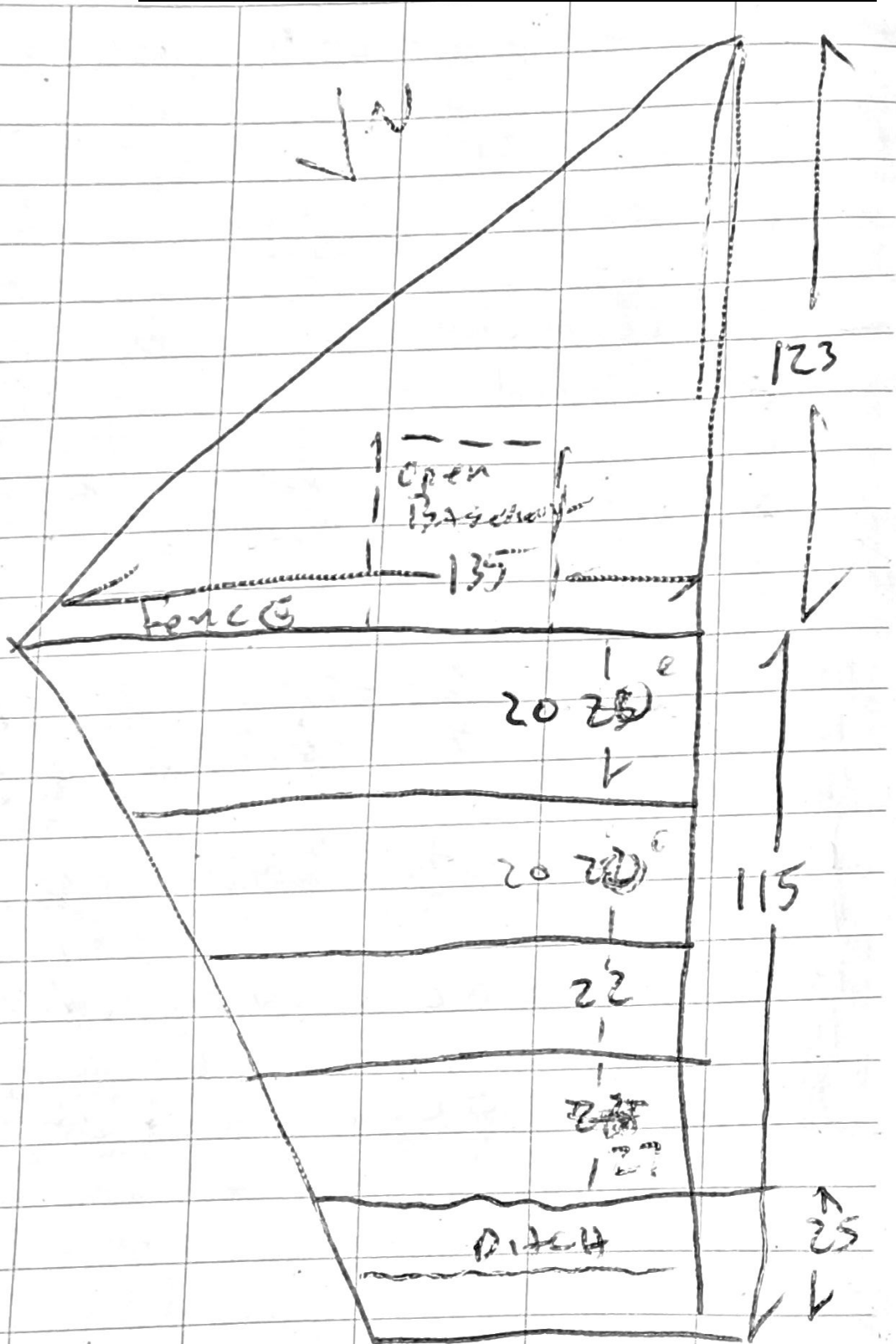
OAZ / USEPA



Location FAIRMONT city

Date 12-¹³ 22

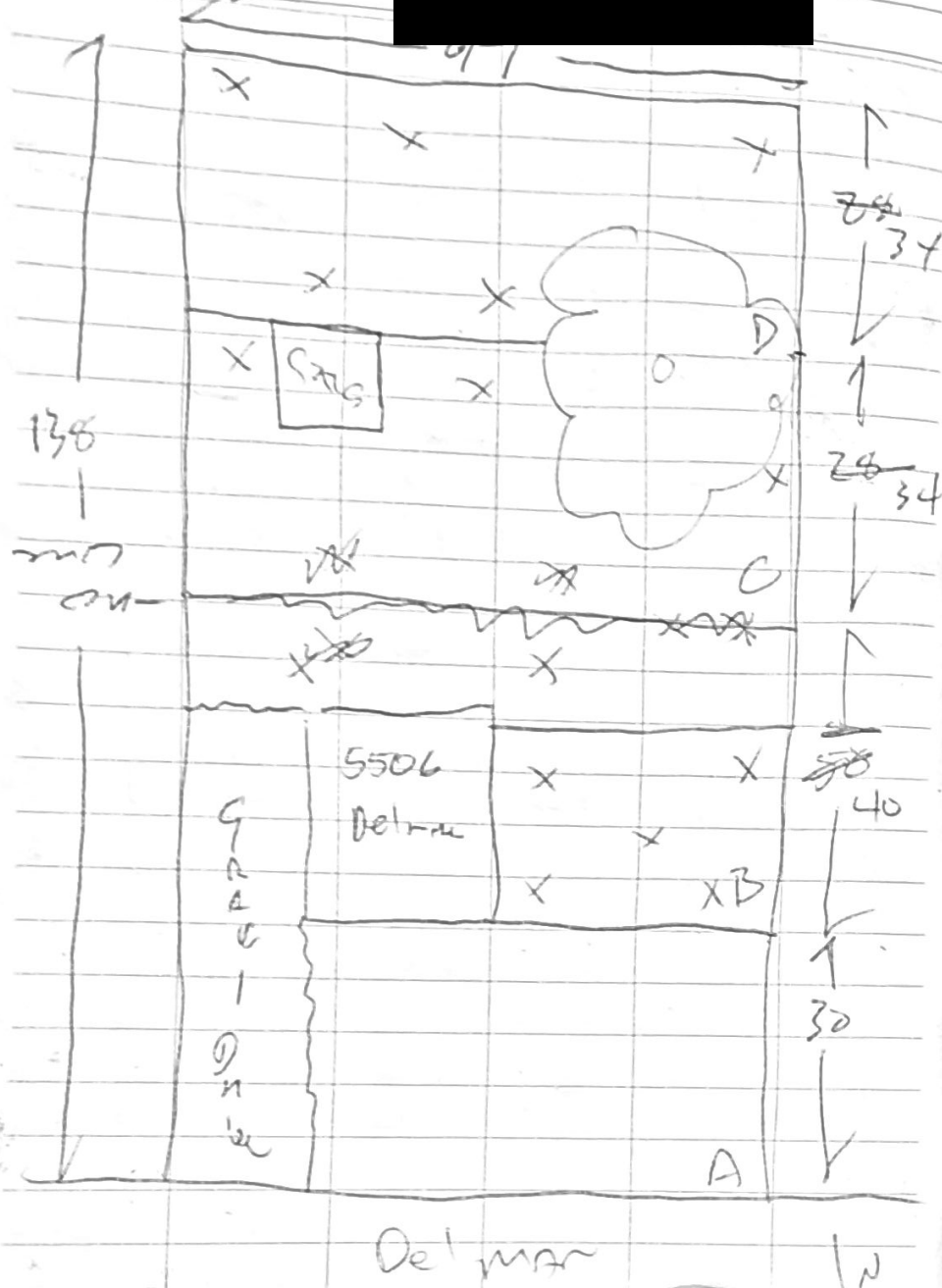
Project / Client OAZ / USEPA



Colonyville Rd

Location FARMington City Date 12-15-22
 Project / Client OAZ / USEPA

0363

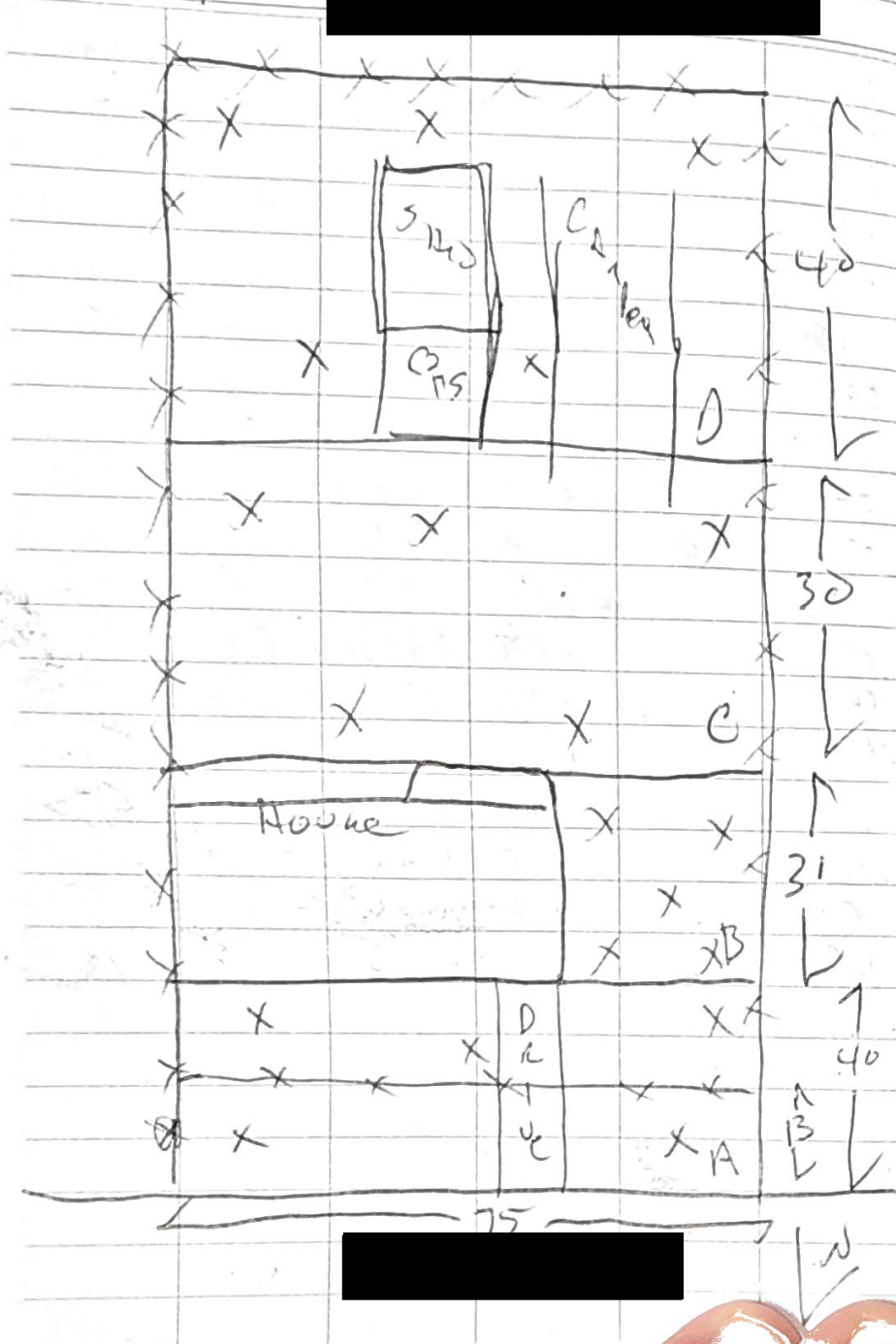


Location FARMington City Date 12-15-22
 Project / Client OAZ / USEPA

0830	Collect	OAZ-0363A-00/06
0835		OAZ-0363A-06/12
0840		OAZ-0363A-12/18
0845		OAZ-0363A-18/24
0848	Collect	OAZ-0363B-00/06
0450		OAZ-0363B-06/12
0453		OAZ-0363B-12/18
0855		OAZ-0363B-18/24
0858		OAZ-0363B-18/24 - MS
0900	Collect	OAZ-0363C-00/06
0903		OAZ-0363C-00/06-R
0905		OAZ-0363C-06/12
0908		OAZ-0363C-12/18
0910		OAZ-0363C-18/24
0915	Collect	OAZ-0363D-00/06
0920	"	OAZ-0363D-06/12
0925		OAZ-0363D-12/18
0930		OAZ-0363D-18/24

1240 AT 2301 [REDACTED]
 Set Flags.
 1415 Sampling Done, Backfill
 Borings with cuttings.
 Hand Auger was Decanned
 Between each sample

Location FAIRMONT C.H. Date 12-15-22
 Project / Client OAZ / USEPA
0374 [REDACTED]



Location FAIRMONT C.H. Date 12-15-22
 Project / Client OAZ / USEPA [REDACTED]

1005	Collect	OAZ-0374A	00/06
1006		OAZ-0374A	00/06-R
1010		OAZ-0374A	06/12
1013		OAZ-0374A	12/18
1015		OAZ-0374A	18/24
1020	Collect	OAZ-0374B	00/06
1025		OAZ-0374B	06/12
1030		OAZ-0374B	12/18
1035 @		OAZ-0374B	18/24
1035		OAZ-0374B	24/18/24-18
1040	Collect	OAZ-0374C	00/06
1045		OAZ-0374C	06/12
1050		OAZ-0374C	12/18
1055		OAZ-0374C	18/24
1100	Collect	OAZ-0374D	00/06
1105		OAZ-0374D	00/06-R
1110		OAZ-0374D	06/12
1115		OAZ-0374D	12/18
1120		OAZ-0374D	18/24

was a water was left in
 section where it was
 produced.

1430 move to [REDACTED]
 set flags

Location FAIRMONT CITY

Date 12-14-22 ^{13C} 63

Project / Client 0A2/USEPA

Alley ← N

